

Claims

What is claimed is:

1. A method for facilitating communications between a user element and
5 a protected network resource comprising:
 - a) establishing a first tunneling session with the user element via a first access network;
 - b) assigning to the user element a first target network protected
10 address for addressing packets intended for the protected network resource and traveling in part over the first tunneling session;
 - c) establishing a second tunneling session with the user element via a second access network; and
 - d) reassigning to the user element the first target network protected
15 address for addressing packets intended for the protected network resource and traveling in part over the second tunneling session.
2. The method of claim 1 wherein the first and second tunneling sessions are encrypted tunneling sessions.
- 20 3. The method of claim 1 further comprising authenticating the first and second tunneling sessions with common authentication indicia.
4. The method of claim 1 wherein the first target network protected
25 address is reassigned to the user element only when the second tunneling session is established within a predetermined period of time from termination or last use of the first tunneling session.
5. The method of claim 4 further comprising assigning to the user element
30 a second target network protected address for addressing packets intended for the protected network resource and traveling in part over the second tunneling session when the second tunneling session is not established with the predetermined period of time.

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6. The method of claim 1 further comprising terminating the first tunneling session and reserving the first target protected network address for the user element for a predetermined period of time for use in association with the second tunneling session.
7. The method of claim 1 further comprising:
- a) receiving a request from the user element for a second tunneling session;
 - b) terminating the first tunneling session; and
 - 10 c) enabling the second tunneling session.
8. The method of claim 1 further comprising receiving the packets from the user element and forwarding the packets to the protected network resource using the first target network protected address.
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9. The method of claim 1 further comprising:
- a) receiving authentication indicia from the user element; and
 - b) authenticating use of the second tunneling session by the user element based on the authentication indicia.
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10. The method of claim 1 wherein the first and second access networks facilitate communications with the user element using different communication technologies.
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11. The method of claim 10 wherein at least one of the different communication technologies is a wireless communication technology.
12. A tunnel access server for facilitating communications between a user element and a protected network resource comprising:
- 30 a) at least one communication interface; and
 - b) a control system associated with the at least one communication interface and adapted to:
 - i) establish a first tunneling session with the user element via a first access network;

- 5 ii) assign to the user element a first target network protected address for addressing packets intended for the protected network resource and traveling in part over the first tunneling session;
- iii) establish a second tunneling session with the user element via a second access network; and
- 10 iv) reassign to the user element the first target network protected address for addressing packets intended for the protected network resource and traveling in part over the second tunneling session.
13. The tunnel access server of claim 12 wherein the first and second tunneling sessions are encrypted tunneling sessions.
- 15 14. The tunnel access server of claim 12 wherein the control system is further adapted to authenticate the first and second tunneling sessions with common authentication indicia.
- 20 15. The tunnel access server of claim 12 wherein the first target network protected address is reassigned to the user element only when the second tunneling session is established within a predetermined period of time from termination or last use of the first tunneling session.
- 25 16. The tunnel access server of claim 15 wherein the control system is further adapted to assign to the user element a second target network protected address for addressing packets intended for the protected network resource and traveling in part over the second tunneling session when the second tunneling session is not established with the predetermined period of time.
- 30 17. The tunnel access server of claim 12 wherein the control system is further adapted to terminate the first tunneling session and reserve the first target network protected address for the user element for a

predetermined period of time for use in association with the second tunneling session.

- 5 18. The tunnel access server of claim 12 wherein the control system is further adapted to:
- a) receive a request from the user element for a second tunneling session;
 - b) terminate the first tunneling session; and
 - c) enable the second tunneling session.
- 10 19. The tunnel access server of claim 12 wherein the control system is further adapted to receive the packets from the user element and forward the packets to the protected network resource using the first target network protected address.
- 15 20. The tunnel access server of claim 12 wherein the control system is further adapted to:
- a) receive authentication indicia from the user element; and
 - b) authenticate use of the second tunneling session by the user
- 20 element based on the authentication indicia.
21. The tunnel access server of claim 12 wherein the first and second access networks facilitate communications with the user element using different communication technologies.
- 25 22. The tunnel access server of claim 21 wherein at least one of the different communication technologies is a wireless communication technology.
- 30 23. A method for facilitating communications between a user element and a protected network resource comprising:
- a) establishing a first tunneling session with a tunnel access server via a first access network;

- 5 b) sending packets intended for the protected network resource over the first tunneling session using a first target network protected address;
- c) establishing a second tunneling session with the tunnel access server via a second access network;
- d) receiving from the tunnel access server a target network protected address for sending packets intended for the protected network resource;
- 10 e) determining if the target network address is the same as the first target network address; and
- f) if the target network address is the same as the first target network address, sending the packets intended for the protected network resource over the second tunneling session using the first target network protected address.
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24. The method of claim 23 wherein if the target network address is different than the first target network protected address, further comprising:
- 20 a) restarting applications communicating with the protected network resource; and
- b) sending the packets intended for the protected network resource over the second tunneling session using the target network protected address.
- 25 25. The method of claim 23 further comprising terminating the first tunneling session prior to establishing the second tunneling session.
26. The method of claim 23 further comprising:
- 30 a) determining a need to communicate with the protected network resource;
- b) determining the first tunneling session is no longer available; and
- c) sending a request for the second tunneling session to the tunnel access server via the second access network.

27. The method of claim 26 further comprising sending authentication indicia for authenticating the user element to the tunnel access server.
28. The method of claim 23 wherein communications with the first and second access networks are facilitated using different communication technologies.
29. The method of claim 28 wherein at least one of the different communication technologies is a wireless communication technology.
30. A user element for facilitating communications with a protected network resource via a tunnel access server comprising:
- a) at least one communication interface; and
 - b) a control system associated with the at least one communication interface and adapted to:
 - i) establish a first tunneling session with the tunnel access server via a first access network;
 - ii) send packets intended for the protected network resource over the first tunneling session using a first target network protected address;
 - iii) establish a second tunneling session with the tunnel access server via a second access network;
 - iv) receive from the tunnel access server a target network address for sending packets intended for the protected network resource;
 - v) determine if the target network address is the same as the first target network protected address; and
 - vi) if the target network address is the same as the first target network address, send the packets intended for the protected network resource over the second tunneling session using the first target network protected address.

31. The user element of claim 30 wherein, if the target network protected address is different than the first target network protected address, the control system is further adapted to:
- 5 a) restart applications communicating with the protected network resource; and
- b) send the packets intended for the protected network resource over the second tunneling session using the target network protected address.
- 10 32. The user element of claim 30 wherein the control system is further adapted to terminate the first tunneling session prior to establishing the second tunneling session.
33. The user element of claim 30 wherein the control system is further adapted to:
- 15 a) determine a need to communicate with the protected network resource;
- b) determine the first tunneling session is no longer available; and
- c) send a request for the second tunneling session to the tunnel
- 20 access server via the second access network.
34. The user element of claim 30 wherein the control system is further adapted to send authentication indicia for authenticating the user element to the tunnel access server.
- 25 35. The user element of claim 30 wherein communications with the first and second access networks are facilitated using different communication technologies.
- 30 36. The user element of claim 35 wherein at least one of the different communication technologies is a wireless communication technology.